[0026] FIG. **5** shows a controller **30** for controlling the motorized drive of the transporter, in accordance with one embodiment of the invention. Controller **30** receives an input characteristic of platform attitude from sensor module **34**. Based at least on the input from the sensor module, controller **30** commands at least one motorized drive **35**, **36**. Controller **30** also interfaces with a user interface **31** and a wheel rotation sensor **33**.

[0027] User interface **31** may include, among other things, controls for turning the controller **30** on or off. When the controller **30** is turned off, the at least one wheel of the transporter may be free to move, such that the transporter acts as a typical push scooter. User interface **31** may also control a locking mechanism **32** for locking the at least one wheel.

[0028] The controller **30** includes a control algorithm to determine the amount of torque to be applied to the at least one wheel based on the sensed attitude of the support platform. The control algorithm may be configured either in design of the system or in real time, on the basis of current operating mode and operating conditions as well as preferences of the user. Controller may implement the control algorithm by using a control loop. The operation of control loops is well known in the art of electromechanical engineering and is outlined, for example, in Fraser & Milne, Electro-Mechanical Engineering, IEEE Press (1994), particularly in Chapter 11, "Principles of Continuous Control" which is incorporated herein by reference.

[0029] As an example, and not meant to be limiting, the control algorithm may take the form:

$$\text{Torque Command to Wheel}=K[\theta+\bigcirc]$$

[0030] where K=gain

[0031] θ=support platform attitude, and

[0032] $\bigcirc$=offset.

[0033] The support platform attitude, θ, may be in the form of an error term defined as the desired support platform attitude minus the measured support platform attitude. The gain, K, may be a predetermined constant, or may be entered/adjusted by the operator through user interface **31**. Responsiveness of the transporter to attitude changes can be governed by K. For example, if K is increased, a rider will perceive a stiffer response in that a small change in platform attitude will result in a large torque command. Offset, $\bigcirc$, may be incorporated into the control algorithm to govern the torque applied to the motorized drive, either in addition to, or separate from, the direct effect of θ. Thus, for example, the user may provide an input by means of a user interface of any sort, the input being treated by the control system equivalently to a change, for example, in platform attitude.

[0034] Thus, referring back to FIG. **2**, motion of the transporter **10** may be controlled by a subject changing the attitude of the platform **11**. This change in attitude is reflected by distances **5**, **6** sensed by the sensor module. Depending on the control algorithm, an initial change in attitude, such that first distance **5** is less than second distance **6**, may result in positive torque being applied to one or more wheels **23**, **24**, causing the wheels **23**, **24** to move forward. Likewise, an initial change in the attitude, such that first distance **5** is greater than second distance **6** may result in a negative torque applied to one or more wheels **23**, **24**, causing the wheels **23**, **24** to move in the aft direction. If the subject then remains in his changed position on the platform such that the platform attitude remains the same, the motor will continue to torque at approximately the same rate.

[0035] In various embodiments of the invention, the sensor module may sense changes in platform attitude in addition to, or instead of inclination of support platform in the fore-aft plane. For example, sensor module may provide an attitude signal indicative of inclination of the support platform in the lateral plane relative to the surface. This may be accomplished by the use of two laterally disposed distance sensors. Changes in the angle of inclination of the support platform in the lateral plane can then be used either separately or in combination with other attitude changes to control motion of the transporter. For example, changes in the angle of inclination in the fore-aft plane can be used to control fore-aft motion, while changes in the angle of inclination in the lateral plane can be used to control steering of the transporter.

[0036] Steering may be accomplished in an embodiment having at least two laterally disposed wheels (i.e., a left and right wheel), by providing separate motors for left and right wheels. Torque desired for the left motor and the torque desired for the right motor can be calculated separately. Additionally, tracking both the left wheel motion and the right wheel motion permits adjustments to be made, as known to persons of ordinary skill in the control arts, to prevent unwanted turning of the vehicle and to account for performance variations between the two motors.

[0037] The described embodiments of the invention are intended to be merely exemplary and numerous variations and modifications will be apparent to those skilled in the art. All such variations and modifications are intended to be within the scope of the present invention as defined in the appended claims.

What is claimed is:

1. A transporter for transporting a load comprising:

a plurality of support platforms;

at least one ground contacting element coupled to the transporter;

a motorized drive arrangement driving the at least one ground contacting element; and

a controller commanding the motorized drive arrangement to apply a torque to the at least one ground contacting element based at least on a control algorithm, the control algorithm responding to least one sensor signal indicative of an attitude of one of the plurality of support platforms, the control algorithm being configured in real time.

2. The transporter of claim **1**, wherein the control algorithm comprises being configured based at least on an operating mode, at least one user preference, and operating conditions.

3. The transporter of claim **1**, wherein at least one point on one of the plurality of support platforms comprises a displaceable point with respect to a frame used to support the at least one ground contacting element.

4. The transporter of claim **1**, wherein at least one the plurality of support platforms being tiltable based on a position of a center of mass of the load relative to the at least one ground contacting element.

5. The transporter of claim **1**, wherein the controller further comprises determining an inclination in the fore-aft plane of one of the plurality of support platforms.